FORM PTO-1390 (REV 10-94) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371	4415.18USWO
	U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5) Unknown 10/030039

INTERNATIONAL APPLICATION NO.	INTERNATIONAL FILING DATE	PRIORITY DATE CLAIMED
PCT/ZA00/00123	July 6, 2000	July 6, 1999

TITLE OF INVENTION

USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS

APPLICANT(S) FOR DO/EO/US

Dave Hedley MORGAN et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. [X] This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(l).
4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. [X] is transmitted herewith (required only if not transmitted by the International Bureau).
   b. [X] has been transmitted by the International Bureau.
   c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US)
6. [ ] A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau).
   b. [ ] have been transmitted by the International Bureau.
   c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
   d. [X] have not been made and will not be made.

8. [ ] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. [X] An unsigned oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).

10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. [X] An Information Disclosure Statement under 37 CFR 1.97 and 1.98, Form 1449, 8 references
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. [X] A FIRST preliminary amendment.
    [ ] A SECOND of SUBSEQUENT preliminary amendment.

14. [ ] A substitute specification.

15. [ ] A change of power of attorney and/or address letter.

16. [X] Other items or information: Form PCT/ISA/210, Form PCT/IPEA/401 and From PCT/IPEA/409

531 RECD PCT/PTO 03 JAN 2002

U.S. APPLICATION NO. (If known, see 37 C.F.R. 1.5)	INTERNATIONAL APPLICATION NO.	ATTORNEY'S DOCKET NUMBER
Unknown 10/030039	PCT/ZA00/00123	4415.18USWO

17. [X] The following fees are submitted:

	CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492(a) (1)-(5)):		
Search Report has been prepared by the EPO or JPO **$890.00**		
International preliminary examination fee paid to USPTO (37 CFR 1.492(a)(1)) **$710.00**		
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) **$740.00**		
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(3)) paid to USPTO **$1040.00**		
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) **$100.00**		
ENTER APPROPRIATE BASIC FEE AMOUNT =	**$890.00**	
Surcharge of **$130.00** for furnishing the oath or declaration later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(e)).	**$**	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	28 -20 =	8	X **$18.00**	**$144.00**	
Independent claims	3 -3 =	0	X **$84.00**	**$0.00**	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ **$260.00**	**$**	
TOTAL OF ABOVE CALCULATIONS =				**$1,034.00**	
Reduction by 1/2 for filing by small entity, if applicable. Small entity status is claimed pursuant to 37 CFR 1.27				**$**	
SUBTOTAL =				**$1,034.00**	
Processing fee of **$130.00** for furnishing the English translation later than [ ] 20 [ ] 30 months from the earliest claimed priority date (37 CFR 1.492(f). +				**$**	
TOTAL NATIONAL FEE =				**$1,034.00**	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +				**$**	
TOTAL FEES ENCLOSED =				**$1,034.00**	
				Amount to be: refunded	**$**
				charged	**$**

a. [X] Check(s) in the amount of $1,034.00 to cover the above fees is enclosed.

b. [ ] Please charge my Deposit Account No. _____ in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. [X] The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 13-2725.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:
Brian H. Batzli
MERCHANT & GOULD
P.O. Box 2903
Minneapolis, MN 55402-0903

SIGNATURE: _____

NAME: Brian H. Batzli

REGISTRATION NUMBER: 32,960

10/030039

531 Rec'd PCT/PTC 03 JAN 2002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: MORGAN et al.

Docket: 4415.18USWO

Title: USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS

CERTIFICATE UNDER 37 CFR 1.10
'Express Mail' mailing label number: EL 669944173 US
Date of Deposit: January 3, 2002
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Commissioner for Patents, Washington, D.C. 20231.

By: _____
Name: Chris Stordahl

BOX PATENT APPLICATION
Commissioner for Patents
Washington, D.C. 20231

Sir:

We are transmitting herewith the attached:

- ☒ Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- ☒ National Stage PCT Patent Application: Spec. 14 pgs; 28 claims; Abstract 1 pgs. The fee has been calculated as shown below in the 'Claims as Filed' table.
- ☒ 7 sheets of formal drawings
- ☒ An unsigned Combined Declaration and Power of Attorney
- ☒ A check in the amount of $1034.00 to cover the Filing Fee
- ☒ Other: Form PTO 1390, Form PCT/ISA/210, Form PCT/IPEA/401, Form PCT/IPEA/409, Information Disclosure Statement, Form 1449, 8 References, Preliminary Amendment
- ☒ Return postcard

CLAIMS AS FILED

Number of Claims Filed		In Excess of:		Number Extra		Rate		Fee
Basic Filing Fee								$890.00
Total Claims								
28	-	20	=	8	x	18.00	=	$144.00
Independent Claims								
3	-	3	=	0	x	84.00	=	$0.00
MULTIPLE DEPENDENT CLAIM FEE								$0.00
TOTAL FILING FEE								$1034.00

Please charge any additional fees or credit overpayment to Deposit Account No. 13-2725. A duplicate of ~~this sheet~~ is enclosed.

By: _____
Name: Brian H. Batzli
Reg. No.: 32,960
Initials: BHB/pjk

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(612) 332-5300

23552
PATENT TRADEMARK OFFICE

(PTO TRANSMITTAL - NEW FILING)

S/N unknown PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	MORGAN et al.	Docket No.:	4415.18USWO
Serial No.:	unknown	Filed:	concurrent herewith
Int'l Appln No.:	PCT/ZA00/00123	Int'l Filing Date:	July 6, 2000
Title:	USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS		

CERTIFICATE UNDER 37 CFR 1.10
'Express Mail' mailing label number: EL 669944173 US
Date of Deposit: January 3, 2002
I hereby certify that this correspondence is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C . 20231.

By:
Name: Chris Stordahl

PRELIMINARY AMENDMENT

Box PCT
Assistant Commissioner for Patents
Washington, D. C. 20231

Dear Sir:

In connection with the above-identified application filed herewith, please enter the following preliminary amendment

IN THE ABSTRACT

Insert the attached Abstract page into the application as the last page thereof.

IN THE SPECIFICATION

A courtesy copy of the present specification is enclosed herewith. However, the World Intellectual Property Office (WIPO) copy should be relied upon if it is already in the U.S. Patent Office.

IN THE CLAIMS

Please cancel original claims 1-49 with out prejudice or disclaimer, and add claims 50-77 to read as follows:

50. (NEW) A process for producing an oxo-alcohol composition including oxo-alcohols having from 8 to 18 carbon atoms, the process including reacting under metathesis conditions one or more Fischer-Tropsch derived hydrocarbons having 5, 6, 7, 8, 9 and/or 10 carbon atoms, whereafter the oxo-alcohol composition is derived by one or more further conventional process steps.

51. (NEW) A process as claimed in claim 50, wherein between 10% and 99% of the oxo-alcohols of the composition are branched oxo-alcohols.

52. (NEW) A process as claimed in claim 50, wherein the oxo-alcohols of the composition are predominantly linear, with between 10% and 49% branched oxo-alcohols in the composition.

53. (NEW) A process as claimed in claim 52, wherein 24% of the oxo-alcohols in the composition are branched oxo-alcohols.

54. (NEW) A process as claimed in claim 51, wherein the branching on the branched oxo-alcohols is predominantly mono-methyl branching.

55. (NEW) A process as claimed in claim 51, wherein the branching on the branched oxo-alcohols includes some di-methyl branching.

56. (NEW) A process as claimed in claim 51, wherein the mono-methyl branching is in excess of 90% of the branching.

57. (NEW) A process as claimed in claim 51, wherein the branching is predominantly on the C4+ carbons.

58. (NEW) A process as claimed in claim 51, wherein some branching is present on the C2 carbon.

59. (NEW) A process as claimed in claim 57, wherein the branching is over 70% on the C4+ carbons.

60. (NEW) A process for producing an alkyl benzene (AB) composition including AB having from 10 to 14 carbon atoms on the alkyl chain, the process including reacting under metathesis conditions one or more Fischer-Tropsch derived hydrocarbons having 6, 7 and/or 8 carbon atoms, whereafter the AB composition is derived by one or more further conventional process steps.

61. (NEW) A process as claimed in claim 60, wherein the AB composition includes between 10% and 90% of branched alkyl chain AB.

62. (NEW) A process as claimed in claim 60, wherein the AB composition includes predominantly linear alkyl chain AB, with between 10% and 49% branched alkyl chain AB in the composition.

63. (NEW) A process as claimed in claim 62, wherein the composition includes 24% branched alkyl chain AB.

64. (NEW) A process as claimed in claim 61, wherein the branching on the branched alkyl chain of the AB is predominantly mono-methyl branching.

65. (NEW) A process as claimed in claim 61, wherein the branching on the branched alkyl chain of the AB includes di-methyl and/or ethyl branching.

66. (NEW) A process as claimed in claim 64, wherein the mono-methyl branching is in excess of 90% of the branching.

67. (NEW) A process as claimed in claim 61, wherein the branching is predominantly on the C4+ carbons of the alkyl chain of the AB.

68. (NEW) A process as claimed in claim 61, wherein some of the branching is on the C2 carbon of the alkyl chain of the AB.

69. (NEW) A process as claimed in claim 61, wherein the branching is in excess of 70% on the C4+ carbons of the alkyl chain of the AB.

70. (NEW) A process for producing a drilling fluid composition component including hydrocarbons having from 14 to 18 carbon atoms, the process including reacting under metathesis conditions one or more Fischer-Tropsch derived hydrocarbons having 8, 9 and/or 10 carbon atoms, whereafter the drilling fluid composition component is derived by one or more further conventional process steps.

71. (NEW) A process as claimed in claim 70, wherein the hydrocarbons are internal olefins.

72. (NEW) A process as claimed in claim 71, wherein the hydrocarbons include between 10% and 90% branched hydrocarbons.

73. (NEW) A process as claimed in claim 70, wherein the hydrocarbons are predominantly linear.

74. (NEW) A process as claimed in claim 72, wherein 24% of the hydrocarbons are branched hydrocarbons.

75. (NEW) A process as claimed in claim 72, wherein the branching on the branched hydrocarbons is predominantly mono-methyl branching.

76. (NEW) A process as claimed in claim 72, wherein the branching on the branched hydrocarbons includes some di-methyl and/or ethyl branching.

77. (NEW) A process as claimed in claim 75, wherein the mono-methyl branching is in excess of 90% of the branching.

REMARKS

The above preliminary amendment is made cancel original claims 1-49 without prejudice or disclaimer, and add claims 50-77.

A new abstract page is supplied to conform to that appearing on the publication page of the WIPO application, but the new Abstract is typed on a separate page as required by U.S. practice.

Applicants respectfully request that the preliminary amendment described herein be entered into the record prior to calculation of the filing fee and prior to examination and consideration of the above-identified application.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Brian H. Batzli (Reg. No. 32,960), at (612) 336.4755.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
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Dated: January 3, 2002

By _____
Brian H. Batzli
Reg. No. 32,960

BHB/pjk

USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS

Field of the Invention

The invention relates to alkyl benzene (AB), drilling fluid and oxo-alcohols.

Background to the Invention

Conversion of lower olefins to higher olefins can be achieved by an isomerizing metathesis process, or metathetic oligomerisation. Conventional metathesis processes require an olefinic feedstock high in purity and linearity and produce highly linear products.

Various heterogeneous contact catalysts such as WO_3/SiO_2, Re_2O_7/Al_2O_3 and $Re_2O_7/Al_2O_3.SiO_2$, and also combinations of these catalysts with co-catalysts can be used for metathesis of unfunctionalized olefins. However, other catalyst and co-catalyst combinations, for example for homogeneous metathesis using WCl_6 and/or $ReCl_6$ and a co-catalyst, have been used successfully and the invention is not limited to any specific catalyst system, nor to homogeneous or hetergeneous metathesis.

Surprisingly, and contrary to conventional thinking, it has now been found that by using metathesis on Fischer-Tropsch process products i.e. using Fischer-Tropsch feedstock to the metathesis process, which feedstock includes both branched and unbranched olefins, as well as non-olefinic components, specific hydrocarbons having from 8 to 18 carbons can be obtained, which hydrocarbons may be used to derive AB, oxo-alcohols and drilling fluid.

By a Fischer-Tropsch process product or feedstock is meant a product obtained by subjecting a synthesis gas including carbon monoxide and hydrogen, to Fischer-Tropsch reaction conditions in the presence of typically an iron based catalyst, a cobalt based catalyst, and iron/cobalt based catalyst, or any other Fischer-Tropsch catalyst, under Fischer-Tropsch reaction conditions.

Summary of the Invention

This invention provides products in the 8 to 18 carbon range derived from 5 to 10 carbon Fischer-Tropsch process products, the products in the 8 to 18 carbon range having a desirable degree of branching or non-linearity.

Thus, according to a first aspect of the invention, there is provided an oxo-alcohol composition including oxo-alcohols having from 8 to 18 carbon atoms, the oxo-alcohols being derived from olefins obtained by metathesis of one or more of 5, 6, 7, 8, 9 and/or 10 carbon containing Fischer-Tropsch derived feedstock.

Between 10% and 99% of the oxo-alcohols of the composition may be branched oxo-alcohols, typically between 10% and 90%.

The oxo-alcohols of the composition may be predominantly linear, with between 10% and 49% branched oxo-alcohols in the composition.

The composition includes between 15% and 35% branched oxo-alcohols.

The composition includes 24% branched oxo-alcohols.

The branching on the branched oxo-alcohols is predominantly mono-methyl branching, however, some di-methyl branching may also be present.

Typically, the mono-methyl branching will be in excess of 90% of the branching, or even in excess of 95%.

The branching may be predominantly on the C4+ carbon, with some branching present on the C2 carbon.

The branching is typically over 70% on the C4+ carbons.

The branching may exceed 90% on the C4+ carbons.

Typically, the oxo-alcohols of the composition in the 8 to 10 carbon range are usable as plasticizer alcohols.

Typically, the oxo-alcohols of the composition in the 10 to 16 carbon range are usable as detergent alcohols.

A typical product make up from the metathesis of a 7 carbon Fischer-Tropsch derived feedstock and suitable for deriving oxo-alcohols therefrom is set out in Table 1 at the end of the specification.

This product of Table 1 may typically be hydroformylated using a Co-EP catalyst, or any other suitable catalyst, to form predominantly linear alcohols, the ratio of linear to branched alcohols being related to the ratio of linear to branched product of the metathesis of the 7 carbon Fischer-Tropsch derived feedstock.

Thus, according to a second aspect of the invention, there is provided an alkyl benzene (AB) composition including AB having from 10 to 14 carbon atoms on the alkyl chain, the AB being derived from olefins obtained by metathesis of one or more of a 6,7 and/or 8 carbon containing Fischer-Tropsch derived feedstock.

The AB composition may contain between 10% and 90% of branched alkyl chain AB.

The AB composition may contain predominantly linear alkyl chain AB, with between 10% and 49% branched alkyl chain AB in the composition.

The composition includes between 15% and 35% branched alkyl chain AB.

The composition includes about 24% branched alkyl chain AB.

The branching on the branched alkyl chain of the AB is predominantly mono-methyl branching, however, some di-methyl and/or ethy branching may also be present.

Typically, the mono-methyl branching will be in excess of 90% of the branching, or even in excess of 95%.

The branching may be predominantly on the C4+ carbon, with some branching present on the C2 carbon.

The branching is typically over 70% on the C4+ carbons.

The branching may exceed 90% on the C4+ carbons.

A typical AB product make up produced from the products of metathesis of a 9 carbon Fischer-Tropsch derived feedstock is set out in Table 3 at the end of the specification.

The AB may be sulfonated to give an alkyl benzene sulfonate which may be used as a detergent. However, the AB composition itself may have uses such as for drilling fluids.

The product of Tables 3 and 4 was fractionated and a 10 to 14 carbon alkyl chain AB fraction was obtained having the following composition (represented as the linear internal olefin only):

Decenes	:	16.53%
Undecenes	:	27.96%
Dodecenes	:	26.19%
Tridecenes	:	4.71%
Tetradecenes	:	0.91%

Methyl branched internal olefins in the 10 to 14 carbon range make up most of the remainder.

Thus, according to a third aspect of the invention, there is provided a drilling fluid composition including hydrocarbons having from 14 to 18 carbon atoms, the hydrocarbons being derived from olefins obtained by metathesis of one or more of a 8, 9 and/or 10 carbon containing Fischer-Tropsch derived feedstock.

The hydrocarbons derived from olefins obtained by metathesis of one or more of a 8, 9 and/or 10 carbon containing Fischer-Tropsch derived feedstock may be internal olefins.

The drilling fluid composition may include between 10% and 90% branched hydrocarbons.

The hydrocarbons of the drilling fluid composition may be predominantly linear, with between 10% and 49% branched hydrocarbons in the composition.

The composition includes between 15% and 35% branched hydrocarbons.

The composition includes about 24% branched hydrocarbons.

The branching on the branched hydrocarbons is predominantly mono-methyl branching, however, some di-methyl and/or ethyl branching may also be present.

The branching may be predominantly on the C4+ carbon, with some branching present on the C2 carbon.

The branching is typically over 70% on the C4+ carbons.

The branching may exceed 90% on the C4+ carbons.

Typically, the mono-methyl branching will be in excess of 90% of the branching, or even in excess of 95%.

A typical product make up from the metathesis of a 9 carbon Fischer-Tropsch derived feedstock and suitable for deriving the drilling fluid composition is set out in Table 2 at the end of the specification.

The product of Table 2 was fractionated and a 14 to 17 carbon fraction was obtained having the following approximate composition (represented as both methyl branched and linear internal olefins):

Tetradecenes :	23.03%
Pentadecenes:	38.40%
Hexadecenes :	36.22%
Heptadecene :	2.35%

Detailed Description of the Invention

Example 1 - Alkyl Benzene Example

An olefinic C_{11}/C_{12} and and a C_{13}/C_{14} olefininc metathesis product derived from metathesis of Fischer-Tropsch olefins, was used to alkylate benzene to produce alkyl benzenes (AB's) .

For the alkylation of benzene with the metathesis product, 1 mole of the metathesis olefins, 10 mole of benzene and 20 wt% based on the olefin mixture of a shape selective Beta - zeolite catalyst were added to a stainless steel autoclave. The autoclave was purged with N_2 and then charged to 1000 psig N_2. The mixture was stirred and heated to 170 - 190°C for 14 - 15 hours. It was then cooled and removed from the autoclave. The reaction mixture was filtered to remove the catalyst and the unreacted benzene was removed in vacuo using a rotary evaporator.

The product was sulfonated with an equivalent of chlorosulfonic acid using methylene chloride as solvent. The methylene chloride was distilled away. The sulfonated product was neutralized with sodium methoxide in methanol and the methanol was evaporated to give alkyl benzene sulfonate, sodium salt mixture.

The product mixture contained methyl and di-methyl branching on the alkyl chain portion of the AB. The phenyl group of the AB's was predominantly on the C2 carbon of the alkyl chain.

As shown in the accompanying Figures numbered I to XVI, the AB's obtained included:

I	1- methyldecyl benzene
II	1-pentylhexylbenzene
III	1-propyloctylbenzene
IV	1-butylheptyl benzene
V	1-ethylnonylbenzene
VI	1,1-dimethylnonylbenzene
VII	1,3- dimethylnonylbenzene
VIII	1,6,7-trimethyloctylbenzene

IX	1,4- dimethylnonylbenzene
X	1,5- dimethylnonylbenzene
XI	1,6- dimethylnonylbenzene
XII	1,7- dimethylnonylbenzene
XIII	1,8- dimethylnonylbenzene
XIV	1,1,3-trimethyloctylbenzene
XV	1,3,7-trimethyloctylbenzene
XVI	1,1,4-trimethyloctylbenzene

Example 2 - Hydroformylation Example

Three different carbon number cuts of a Fischer-Tropsch olefinic feed produced by metathesis i.e C_9/C_{10}, C_{11}/C_{12} and a C_{13}/C_{14} cuts, were batch hydroformylated to evaluate their suitability as detergent alcohol (DA) feed, on the basis of reaction rate and total olefin content. Compared to conventional Fischer-Tropsch olefinic feed, the metathesis feed generally exhibited a 25% greater hydroformylation rate and this together with the higher olefinic content (>90%) should lead to significant reductions in reactor size and distillation requirements. The linearity and n:iso ratio of the metathesis product is practically identical to that of the conventional olefinic feed derived product. Metathesis feedstock thus appears to be preferable to conventional olefininc feedstock for DA process.

Batch hydroformylation

100ml of, respectively, a C_9/C_{10}, a C_{11}/C_{12} and a C_{13}/C_{14} carbon number cut of metathesis product were exhaustively hydroformylated using a liganded cobalt catalyst. The reaction temperature was 170°C, the initial pressure 85 bar and the syngas $CO:H_2$ ratio was 2:1. In each case the pressure drop with time in the autoclave was measured (i) to calculate the initial hydroformylation rate and (ii) to calculate the gas consumption for complete olefin conversion (i.e. exhaustive hydroformylation). The cobalt-EP catalyst was used to catalyse the reaction as it results in rapid double-bond isomerisation enabling full utilisation of the internal double bonds in the metathesis feed.

The results of the batch experiments are summarised in Table 5 below.

Olefin content: The olefin content of the metathesis feed was derived from the total gas consumption during the exhaustive hydroformylation studies. The total olefinic content of the metathesis feed was greater than 90%. This is significantly higher than that of conventional olefinic feed which is about 50%.

Hydroformylation rate: The hydroformylation rate was calculated from the initial pressure drop with time. While the intrinsic rate (i.e. the rate constant) of metathesis feed hydroformylation is slower than that of conventional olefinic feed hydroformylation, this is more than compensated for by the significantly higher olefin content of the metathesis feed. For both the C_9/C_{10} and the C_{11}/C_{12} fractions the metathesis feed exhibited a 25% faster apparent hydroformylation rate than the conventional olefininc feed while the hydroformylation rate of the metathesis feed C_{13}/C_{14} was a little slower than that of a similar conventional olefinic feed. The slower intrinsic hydroformylation rate of the metathesis feed is most probably due to the greater number of internal olefins. Significant double bond isomerisation thus has to take place before hydroformylation can take place at the terminal position.

Linearity and n:iso ratio: The linearity and the n:iso ratio of the metathesis product was comparable to that of the conventional olefinic feed product. The supposed greater number of internal double bonds in the metathesis feed did not negatively affect the linearity of the alcohol product as hydroformylation at the terminal double-bond is favoured above internal double bond hydroformylation.

Table 5. Results of batch hydroformylation experiments

Feed source Carbon number cut	Conventional C_{11}/C_{12}	Metathesis C_9/C_{10}	Metathesis C_{11}/C_{12}	Metatesis C_{13}/C_{14}
Olefin content* [mass% of feed]	50%	90%	97%	93%
Apparent hydroformylation rate [$mmol_{alcohol}$-$hour^{-1}$]	80	105	91	58
Hydroformylation rate constant, $k_{lumbed} = \frac{r_{apparent}}{[olefin]}$	32	22	20	16
Linearity [mass%]	51%	68%	63%	58%
n:iso Ratio [mol:mol]	5.1	5.8	5.4	6.2

* calculated assuming 10% hydroformylation as for conventional oefininc feed

Example 3 – Drilling Fluids

C_{16} Fischer-Tropsch internal olefins were obtained by metathesis and were useable as a drilling fluid composition.

The drilling fluid composition included about 75% internal linear olefins and about 25% internal branched olefins, which internal branched olefins were predominantly mono-methyl, di-methyl and ethyl branched.

The drilling fluid compositions in accordance with the invention had the following physical properties:

The properties are for a typical C_{12}-C_{16} internal linear and branched combination of olefinic product made in accordance with the present invention:

Viscocity: 1-2 cSt @ 100'C
Flash point: >90'C
Linear:branch ratio 1:1 to 5:1
Pour Point: < 0'C

Examples of the internal olefins useful as drilling fluids include:

1) A drilling fluid including:
A linear component making up about 75.1% of the composition; and
A mono-methyl branched component making up about 24.9% of the drilling fluid composition.

2) A drilling fluid composition including:
A linear component of mainly hexadec-3-ene in amounts of between 2 and 40%, depending on process conditions; and
A mono-methyl branched component of between 60% and 98% of the drilling fluid composition.

Table 1: Mass and component balance of a batch reaction of water washed C7 cut

COMPONENT	FEED mass %	PRODUCT mass %
3-Me-1-hexene	1.0693	0.0000
5-Me-1-hexene	2.3655	0.0000
4-Me-1-hexene	3.8129	0.0000
2-Me-1-hexene	6.0078	0.2428
2-Methylhexane	1.6928	2.0457
3-Methylhexane	3.0273	3.3236
1-heptene	75.6871	0.9740
n-heptane	2.5700	2.3867
heptene (Z, E)	0.0000	0.0000
3-Heptene	0.9803	3.1209
diene or cyclic olefin	1.0121	0.0791
2-Heptene	0.0000	3.2820
Dienes or cyclic olefins	0.5094	0.0000
Ethylene		1.9997
Prophylene		3.4060
Butenes		3.6816
Pentenes		4.1432
Hexenes		7.2954
Methyl branced heptenes		1.3442
n-octenes		9.7463
n-Nonenes		7.4719
Methyl branced nonenes		1.4163
n-Decenes		9.2216
Methyl branced decenes		2.7138
n-undecenes		12.5128
Methyl branced undecenes		2.3198
n-dodecenes		12.0218
Methyl branced dodecenes		0.4282
tridecenes		2.9284
tetradecene		0.7476
pentadecene		0.1664
unknowns	1.2655	0.1664
Heavies		0.9803

Reaction Conditions in the above table:

MASS CATALYST (g)	51.81
MASS C7 FEED (g)	316.38
MASS PRODUCT (g)	280.55
mol me-hexenes + n-heptenes in	2.90
mol me-hexenes + n-heptenes out	0.26
heptene conversion	91.06
mol C10 – 14 formed	0.94
mol % yield	65.18
selectivity (%)	71.58

TABLE 2: Mass and component balance of the batch reaction acetonitrile washed .

COMPONENT	FEED mass %	PRODUCT Mass %
3-Me-1-octene	0.1407	0.0000
7+4-Me-1-octene	0.9809	0.0000
6-me-1-octene	0.9637	0.0000
2-Me-1-octene	0.8992	0.0000
4+2-Methyloctane	1.1467	1.4687
3-Methyloctane	1.5091	1.8279
n-nonenes	75.5614	15.3960
n-nonane	11.3149	13.3231
dienes/cyclic olefins	1.7378	1.1135
Ethylene		1.6064
Propylene		2.5809
Butenes		2.1397
Pentenes		1.3528
Hexenes		0.7844
Heptenes		1.4035
n-octenes		4.4380
n-Decenes		10.1435
n-undecenes		1.7770
n-dodecenes		1.5719
Tridecenes		3.5240
methyl branched C 13		0.0000
Tetradecene		7.5024
methyl branched C 14		0.6842
Pentadecene		12.9260
methyl branched C 15		0.7234
Hexadecene		12.8760
Heptadecene		0.8366
Unknowns	5.7457	0.8366

Reaction Conditions in the above table:

C9 : Re207	1000 : 1
MASS CATALYST (g)	0.75
MASS C9 FEED (g)	10.71
MASS PRODUCT (g)	9.99
mol me-octenes + n-nonenes in	0.07
mol me-octenes + n-nonenes out	0.01
nonene conversion	80.56
mol C14 – 18 formed	0.02
mol % yield	52.28
selectivity (%)	64.90

Table 3: Mass % of Components in Alkyl Benzene Product

Component	Mass%
Branched C_{10} benzene	0.51
Branched C_{10} benzene	0.12
Branched C_{10} benzene	0.14
Branched C_{10} benzene	0.20
Branched C_{10} benzene	0.29
Branched C_{10} benzene	0.39
5-Decylbenzene	2.91
4-Decylbenzene	2.79
Branched C_{10} benzene	0.17
Branched C_{10} benzene	0.76
3-Decylbenzene	4.34
Branched C_{10} benzene	0.25
Branched C_{10} benzene	0.82
Branched C_{11} benzene	1.23
2-Decylbenzene	6.87
Branched C_{11} benzene	0.70
Branched C_{11} benzene	0.57
Branched C_{11} benzene	0.88
5+6-Decylbenzene	7.95
Branched C_{11} benzene	0.52
4-Undecylbenzene	4.59
Branched C_{11} benzene	1.78
3-Undecylbenzene	8.49
Branched C_{11} benzene	1.10
Branched C_{12} benzene	0.41
Branched C_{12} benzene	0.93
2-Undecylbenzene	10.22
Branched C_{12} benzene	0.59
Branched C_{12} benzene	0.94
6-Dodecylbenzene	4.57
5-Dodecylbenzene	3.83
Branched C_{12} benzene	0.71
4-Dodecylbenzene	3.85
Branched C_{12} benzene	0.49
Branched C_{12} benzene	0.54
Branched C_{12} benzene	0.82
3-Dodecylbenzene	5.96
Branched C_{12} benzene	0.66
Branched C_{13} benzene	0.74
2-Dodecylbenzene	7.92
5+6-Tridecylbenzene	1.04
4-Tridecylbenzene	0.73
3-Tridecylbenzene	1.42
2-Tridecylbenzene	1.38
Branched C_{14} Benzenes	0.46
Branched C_{14} Benzenes	1.45
5+6-Tetradecylbenzene	0.50
4-Tetradecylbenzene	0.21
3-Tetradecylbenzene	0.51
2-Tetradecylbenzene	0.77

Table 4: Linear and Branched Analysis of Alkyl Benzene Product

Component	%
C_{10}	
2-Decylbenzene	6.87
3-Decylbenzene	4.34
4-Decylbenzene	2.79
5-Decylbenzene	2.91
Total linear	16.90
Total branched	3.65
C_{11}	
2-Undecylbenzene	10.22
3-Undecylbenzene	8.49
4-Undecylbenzene	4.59
5+6-Undecylbenzene	7.95
Total linear	31.26
Total branched	6.78
C_{12}	
2-Dodecylbenzene	7.92
3-Dodecylbenzene	5.96
4-Dodecylbenzene	3.85
5-Dodecylbenzene	3.83
6-Dodecylbenzene	4.57
Total linear	26.13
Total branched	6.08
C_{13}	
2-Tridecylbenzene	1.38
3-Tridecylbenzene	1.42
4-Tridecylbenzene	0.73
5+6-Tridecylbenzene	1.04
Total linear	4.56
Total branched	0.74
C_{14}	
2-Tetradecylbenzene	0.77
3-Tetradecylbenzene	0.51
4-Tetradecylbenzene	0.21
5+6-Tetradecylbenzene	0.50
Total linear	1.98
Total branched	1.91

Claims:

1. An oxo-alcohol composition including oxo-alcohols having from 8 to 18 carbon atoms, the oxo-alcohols being derived from olefins obtained by metathesis of one or more Fischer-Tropsch derived hydrocarbons selected from hydrocarbons having 5, 6, 7, 8, 9 and/or 10 carbon atoms.

2. An oxo-alcohol composition as claimed in claim 1, wherein between 10% and 99% of the oxo-alcohols of the composition are branched oxo-alcohols.

3. An oxo-alcohol composition as claimed in claim 1 or claim 2, wherein the oxo-alcohols of the composition are predominantly linear, with between 10% and 49% branched oxo-alcohols in the composition.

4. An oxo-alcohol composition as claimed in claim 3, wherein between 15% and 35% of the oxo-alcohols in the composition are branched oxo-alcohols.

5. An oxo-alcohol composition as claimed in claim 3, wherein 24% of the oxo-alcohols in the composition are branched oxo-alcohols.

6. An oxo-alcohol composition as claimed in any one of claims 2 to 5, wherein the branching on the branched oxo-alcohols is predominantly mono-methyl branching.

7. An oxo-alcohol composition as claimed in any one of claims 2 to 6, wherein the branching on the branched oxo-alcohols iincludes some di-methyl branching.

8. An oxo-alcohol composition as claimed in any one of claims 2 to 7, wherein the mono-methyl branching is in excess of 90% of the branching.

9. An oxo-alcohol composition as claimed in any one of claims 2 to 8, wherein the mono-methyl branching is in excess of 95% of the branching.

10. An oxo-alcohol composition as claimed in any one of claims 2 to 9, wherein the branching is predominantly on the C4+ carbons.

11. An oxo-alcohol composition as claimed in any one of claims 2 to 10, wherein some branching is present on the C2 carbon.

12. An oxo-alcohol composition as claimed in any one of claims 10 or 11, wherein the branching is over 70% on the C4+ carbons.

13. An oxo-alcohol composition as claimed in any one of claims 10 to 12, wherein the branching is over 90% on the C4+ carbons.

14. A plasticizer alcohol derived from at least a fraction of the oxo-alcohol composition as claimed in any one of the preceding claims, wherein the fraction includes hydrocarbons in the 8 to 10 carbon range.

15. A detergent alcohol derived from at least a fraction of the oxo-alcohol composition as claimed in any one of the preceding claims, wherein the fraction includes hydrocarbons in the 10 to 16 carbon range.

16. An alkyl benzene (AB) composition including AB having from 10 to 14 carbon atoms on the alkyl chain, the AB being derived from olefins obtained by metathesis of one or more Fischer-Tropsch derived hydrocarbons selected from hydrocarbons having 6, 7 and/or 8 carbon atoms.

17. An alkyl benzene (AB) composition as claimed in claim 16, which AB composition includes between 10% and 90% of branched alkyl chain AB.

18. An alkyl benzene (AB) composition as claimed in claim 16 or claim 17, wherein the AB composition includes predominantly linear alkyl chain AB, with between 10% and 49% branched alkyl chain AB in the composition.

19. An alkyl benzene (AB) composition as claimed in claim 18, wherein the composition includes between 15% and 35% branched alkyl chain AB.

20. An alkyl benzene (AB) composition as claimed in claim 18 or 19, wherein the composition includes 24% branched alkyl chain AB.

21. An alkyl benzene (AB) composition as claimed in any one of claims 17 to 20, wherein the branching on the branched alkyl chain of the AB is predominantly mono-methyl branching.

22. An alkyl benzene (AB) composition as claimed in any one of claims 17 to 20, wherein the branching on the branched alkyl chain of the AB includes di-methyl and/or ethyl branching.

23. An alkyl benzene (AB) composition as claimed in claim 21 or claim 22, wherein the mono-methyl branching is in excess of 90% of the branching.

24. An alkyl benzene (AB) composition as claimed in claim 21 or claim 22, wherein the mono-methyl branching is in excess of 95% of the branching.

25. An alkyl benzene (AB) composition as claimed in any one of claims 17 to 24, wherein the branching is predominantly on the C4+ carbons of the alkyl chain of the AB.

26. An alkyl benzene (AB) composition as claimed in any one of claims 17 to 25, wherein some of the branching is on the C2 carbon of the alkyl chain of the AB.

27. An alkyl benzene (AB) composition as claimed in any one of claims 17 to 26, wherein the branching is in excess of 70% on the C4+ carbons of the alkyl chain of the AB.

28. An alkyl benzene (AB) composition as claimed in any one of claims 17 to 26, wherein the branching is in excess of 90% on the C4+ carbons of the alkyl chain of the AB.

29. A detergent composition including a sulfonated alkyl benzene as claimed in any one of claims 16 to 28.

30. A drilling fluid composition including an AB composition as claimed in any one of claims 16 to 28.

31. A drilling fluid composition including hydrocarbons having from 14 to 18 carbon atoms, the hydrocarbons being derived from olefins obtained by metathesis of one or more Fischer-Tropsch derived hydrocarbons selected from hydrocarbons having 8, 9 and/or 10 carbon atoms.

32. A drilling fluid composition as claimed in claim 31, wherein the hydrocarbons are internal olefins.

33. A drilling fluid composition as claimed in claim 31 or 32, which includes between 10% and 90% branched hydrocarbons.

34. A drilling fluid composition as claimed in any one of claims 31 to 33, wherein the hydrocarbons are predominantly linear.

35. A drilling fluid composition as claimed in claim 33 or 34, which composition includes between 10% and 49% branched hydrocarbons.

36. A drilling fluid composition as claimed in claim 33 or 34, which composition includes between 15% and 35% branched hydrocarbons.

37. A drilling fluid composition as claimed in claim 33 or 34, which composition includes 24% branched hydrocarbons.

38. A drilling fluid composition as claimed in any one of claims 33 to 37, wherein the branching on the branched hydrocarbons is predominantly mono-methyl branching.

39. A drilling fluid composition as claimed in any one of claims 33 to 38, which includes some di-methyl and/or ethyl branching.

40. A drilling fluid composition as claimed in any one of claims 33 to 39, wherein the branching is predominantly on the C4+ carbons of the alkyl chain of the AB.

41. A drilling fluid composition as claimed in any one of claims 33 to 40, which includes branching on the C2 carbon of the alkyl chain of the AB.

42. A drilling fluid composition as claimed in any one of claims 33 to 41, wherein the branching is in excess of 70% on the C4+ carbons of the alkyl chain of the AB.

43. A drilling fluid composition as claimed in any one of claims 33 to 42, wherein the branching is in excess of 90% on the C4+ carbons of the alkyl chain of the AB.

44. A drilling fluid composition as claimed in any one of claims 38 to 43, wherein the mono-methyl branching is in excess of 90% of the branching.

45. A drilling fluid composition as claimed in any one of claims 38 to 44, wherein the mono-methyl branching is in excess of 95% of the branching.

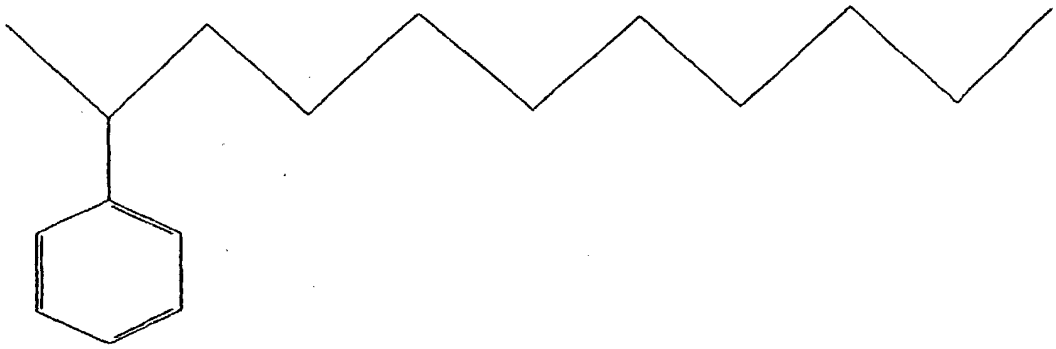
46. An oxo-alcohol composition, substantially as herein described and illustrated.

47. An alkyl benzene composition, substantially as herein described and illustrated.

48. A drilling fluid composition, substantially as herein described and illustrated.

49. A new oxo-alcohol composition, a new alkyl benzene composition, or a new drilling fluid composition substantially as herein described.

1/7



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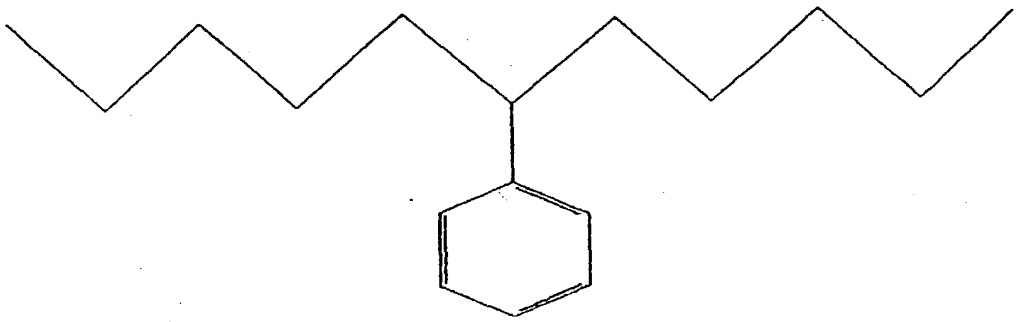

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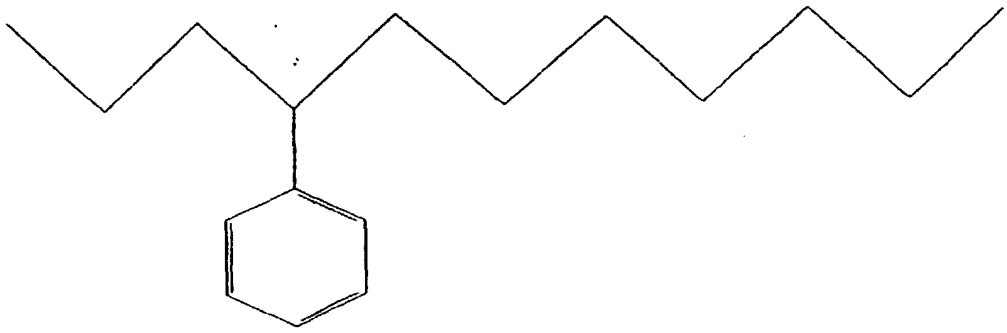

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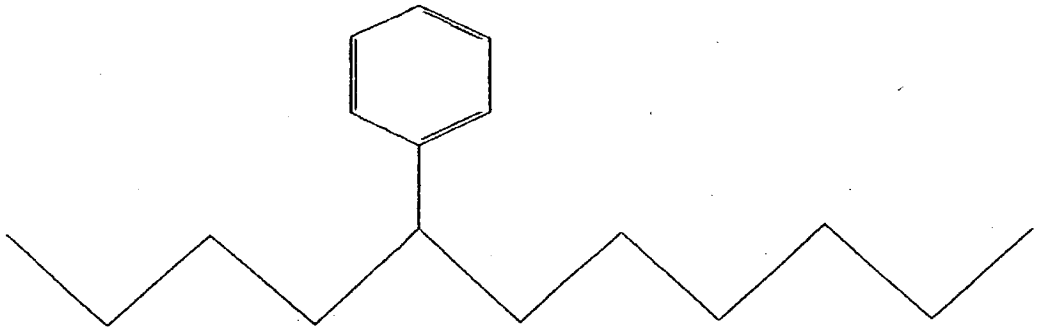

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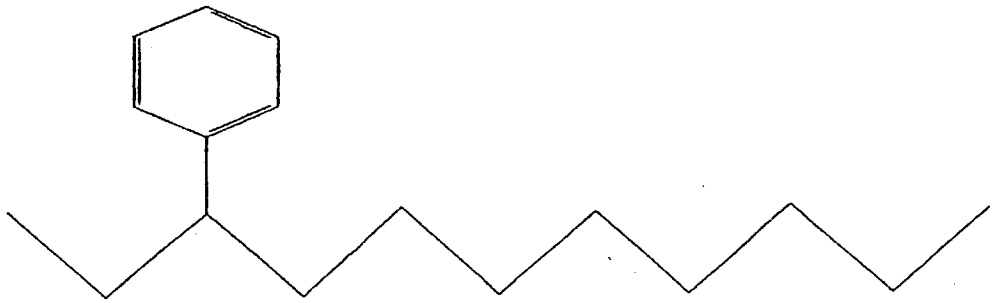

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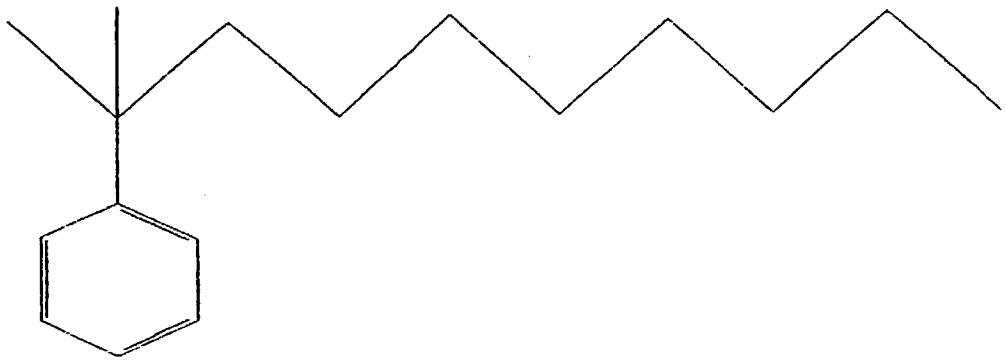

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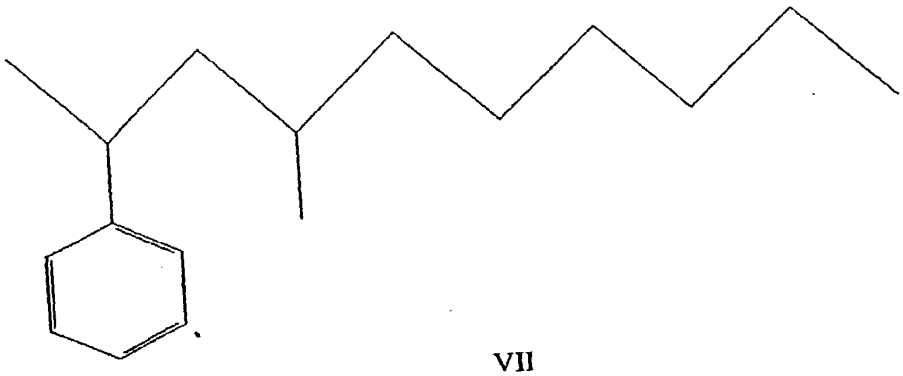

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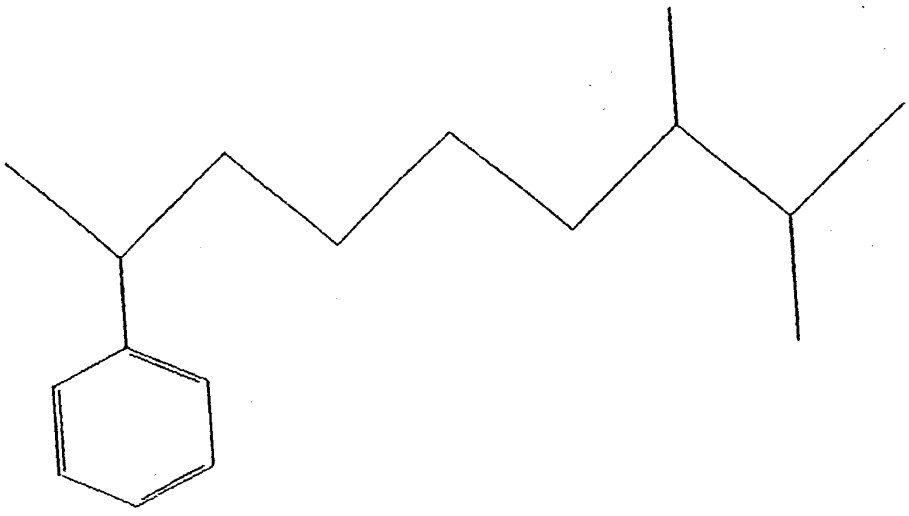

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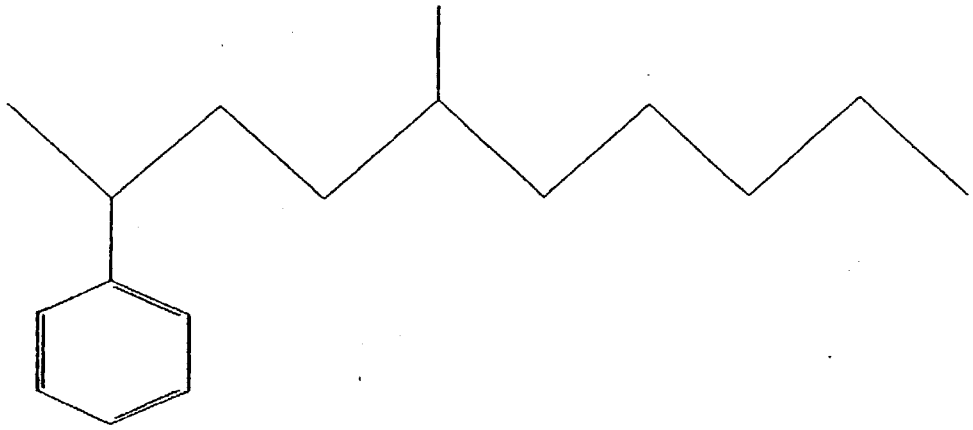

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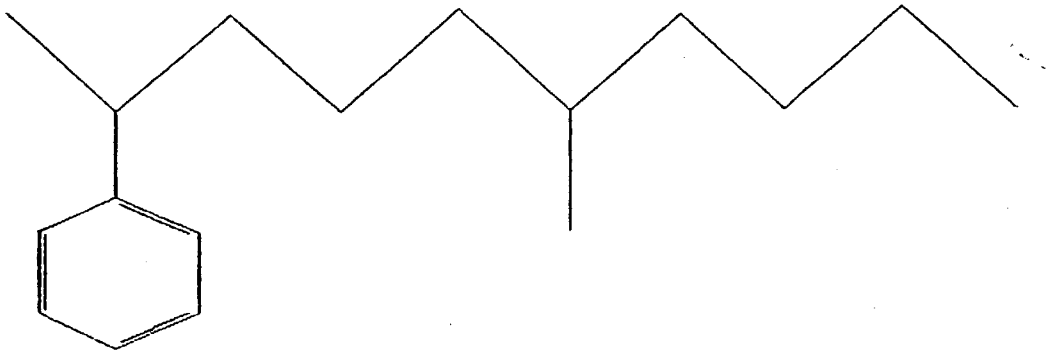

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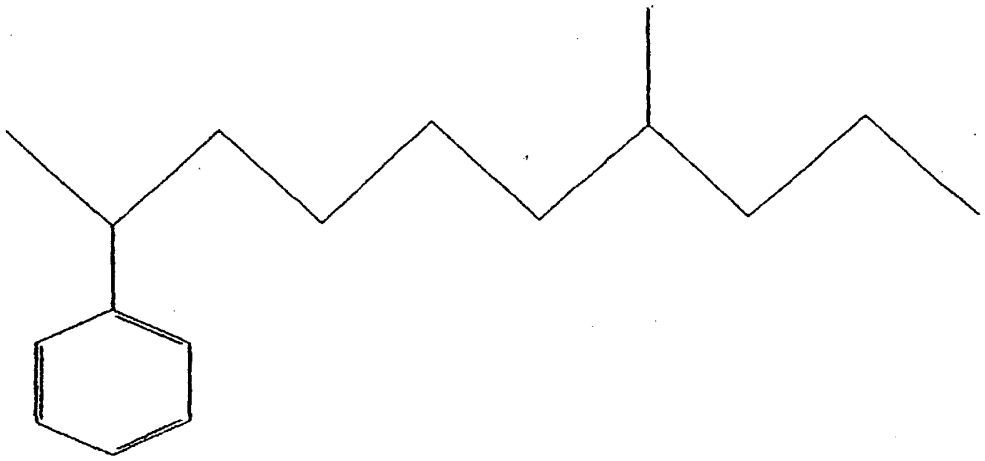

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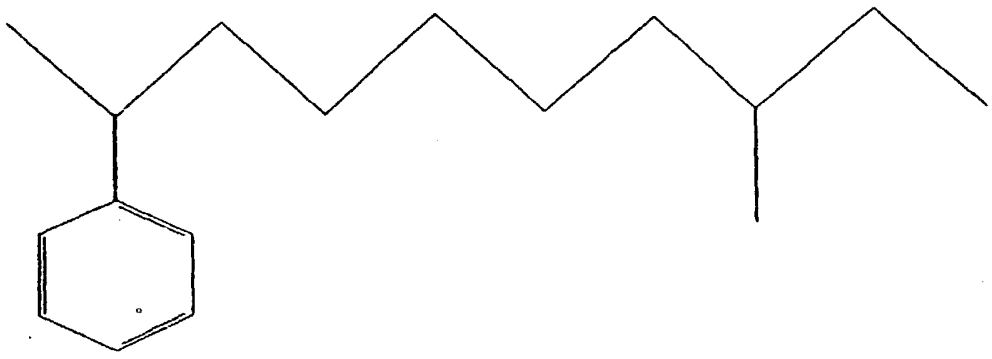

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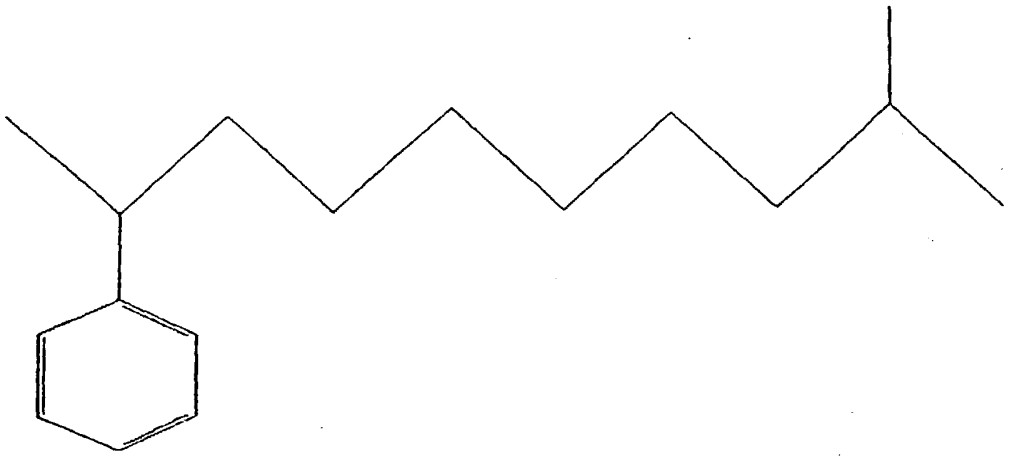

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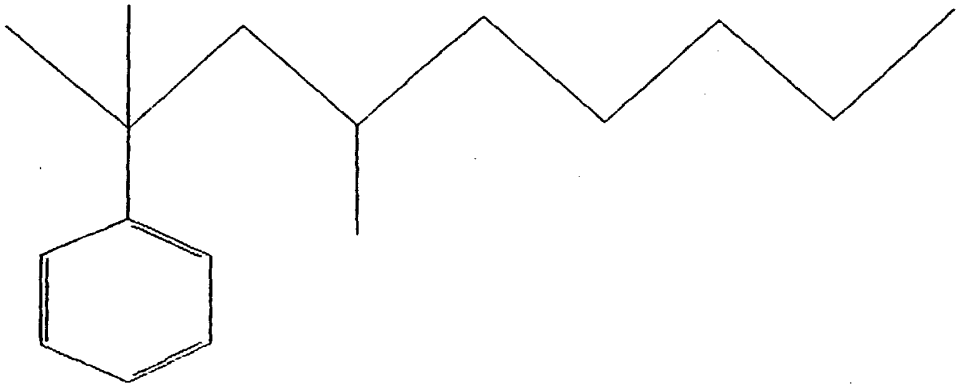

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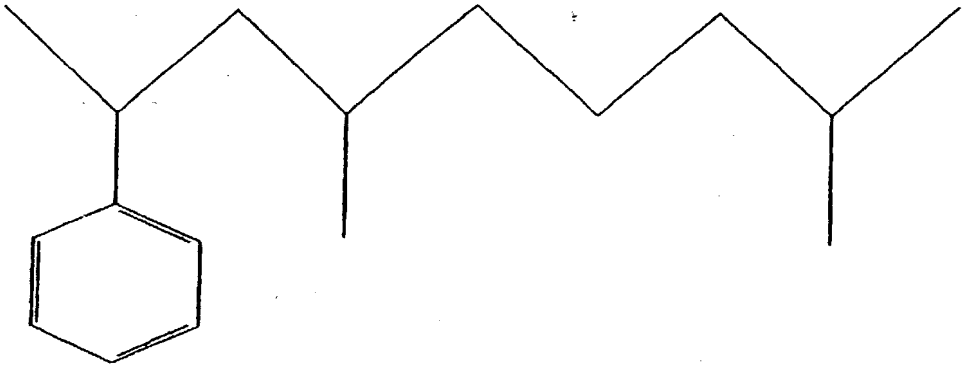

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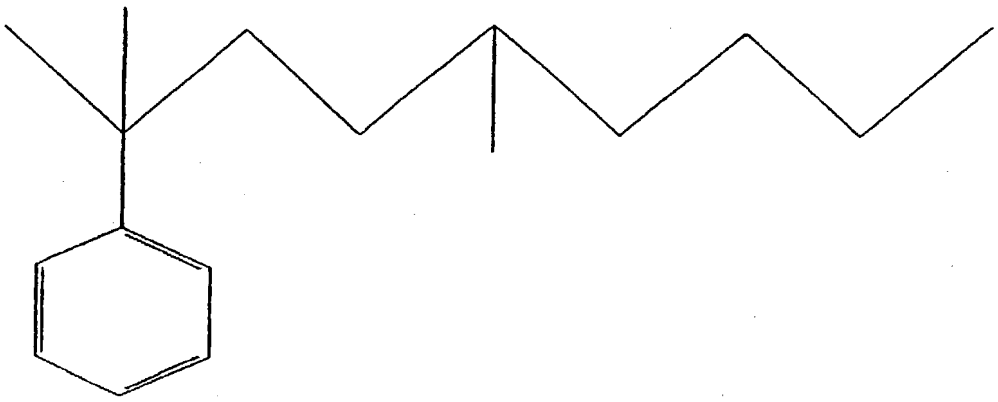

XVI

ABSTRACT

The invention provides oxo-alcohols, alkyl benzenes, and drilling fluid compositions derived from hydrocarbons derived by metathesis of Fischer-Tropsch hydrocarbons.

Attorney Docket No. 4415.18USWO

10021039 F217USA

MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next to name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS

The specification of which
a. ☐ is attached hereto
b. ☒ was filed on January 2, 2002 as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. PCT/ZA00/00123 filed July 6, 2000 and as amended on (if any), which I hav reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended b any amendment referred to above.

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or invento certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date bef that of the application on the basis of which priority is claimed:

a. ☐ no such applications have been filed.
b. ☒ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	**APPLICATION NUMBER**	**DATE OF FILING (day, month, year)**	**DATE OF ISSUE (day, month, year)**
South Africa	99/04377	6 July 1999	
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	**APPLICATION NUMBER**	**DATE OF FILING (day, month, year)**	**DATE OF ISSUE (day, month, year)**

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the natio or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/142,381	6 July 1999

10[redacted]039 F2170USA

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of car and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of an claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Offi was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent applicatio believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a cl

or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent witl specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusio patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and wl associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available bet the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

10030039 P2170USA

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent a Trademark Office connected herewith:

(62) Albrecht, John W.	Reg. No. 40,481	Leonard, Christopher J.	Reg. No. 41,940
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Anderson, Gregg I.	Reg. No. 28,828	Lown, Jean A.	Reg. No. 48,428
Batzli, Brian H.	Reg. No. 32,960	Mayfield, Denise L.	Reg. No. 33,732
Beard, John L.	Reg. No. 27,612	McDonald, Daniel W.	Reg. No. 32,044
Berns, John M.	Reg. No. 43,496	McIntyre, Jr., William F.	Reg. No. 44,921
Branch, John W.	Reg. No. 41,633	Mitchem, M. Todd	Reg. No. 40,731
Brown, Jeffrey C.	Reg. No. 41,643	Mueller, Douglas P.	Reg. No. 30,300
Bruess, Steven C.	Reg. No. 34,130	Nelson, Anna M.	Reg. No. 48,935
Byrne, Linda M.	Reg. No. 32,404	Paley, Kenneth B.	Reg. No. 38,989
Campbell, Keith	Reg. No. 46,597	Parsons, Nancy J.	Reg. No. 40,364
Carlson, Alan G.	Reg. No. 25,959	Pauly, Daniel M.	Reg. No. 40,123
Caspers, Philip P.	Reg. No. 33,227	Phillips, John B.	Reg. No. 37,206
Clifford, John A.	Reg. No. 30,247	Pino, Mark J.	Reg. No. 43,858
Cook, Jeffrey	Reg. No. 48,649	Prendergast, Paul	Reg. No. 46,068
Daignault, Ronald A.	Reg. No. 25,968	Pytel, Melissa J.	Reg. No. 41,512
Daley, Dennis R.	Reg. No. 34,994	Qualey, Terry	Reg. No. 25,148
Daulton, Julie R.	Reg. No. 36,414	Reich, John C.	Reg. No. 37,703
DeVries Smith, Katherine M.	Reg. No. 42,157	Reiland, Earl D.	Reg. No. 25,767
DiPietro, Mark J.	Reg. No. 28,707	Samuels, Lisa A.	Reg. No. 43,080
Doscotch, Matthew A.	Reg No. P-48,957	Schmaltz, David G.	Reg. No. 39,828
Edell, Robert T.	Reg. No. 20,187	Schuman, Mark D.	Reg. No. 31,197
Epp Ryan, Sandra	Reg. No. 39,667	Schumann, Michael D.	Reg. No. 30,422
Glance, Robert J.	Reg. No. 40,620	Scull, Timothy B.	Reg. No. 42,137
Goff, Jared S.	Reg. No. 44,716	Sebald, Gregory A.	Reg. No. 33,280
Goggin, Matthew J.	Reg. No. 44,125	Skoog, Mark T.	Reg. No. 40,178
Golla, Charles E.	Reg. No. 26,896	Spellman, Steven J.	Reg. No. 45,124
Gorman, Alan G.	Reg. No. 38,472	Stewart, Alan R.	Reg. No. 47,974
Gould, John D.	Reg. No. 18,223	Stoll-DeBell, Kirstin L.	Reg. No. 43,164
Gregson, Richard	Reg. No. 41,804	Sullivan, Timothy	Reg. No. 47,981
Gresens, John J.	Reg. No. 33,112	Sumner, John P.	Reg. No. 29,114
Hamer, Samuel A.	Reg. No. 46,754	Swenson, Erik G.	Reg. No. 45,147
Hamre, Curtis B.	Reg. No. 29,165	Tellekson, David K.	Reg. No. 32,314
Harrison, Kevin C.	Reg. No. 46,759	Trembath, Jon R.	Reg. No. 38,344
Hertzberg, Brett A.	Reg. No. 42,660	Tunheim, Marcia A.	Reg. No. 42,189
Hillson, Randall A.	Reg. No. 31,838	Underhill, Albert L.	Reg. No. 27,403
Holzer, Jr., Richard J.	Reg. No. 42,668	Vandenburgh, J. Derek	Reg. No. 32,179
Hope, Leonard J.	Reg. No. 44,774	Wahl, John R.	Reg. No. 33,044
Jardine, John S.	Reg. No. P-48,835	Weaver, Paul L.	Reg. No. 48,640
Johns, Nicholas P.	Reg. No. 48,995	Welter, Paul A.	Reg. No. 20,890
Johnston, Scott W.	Reg. No. 39,721	Whipps, Brian	Reg. No. 43,261
Kadievitch, Natalie D.	Reg. No. 34,196	Whitaker, John E.	Reg. No. 42,222
Kaseburg, Frederick A.	Reg. No. 47,695	Wier, David D.	Reg. No. P-48,229
Kettelberger, Denise	Reg. No. 33,924	Williams, Douglas J.	Reg. No. 27,054
Keys, Jeramie J.	Reg. No. 42,724	Withers, James D.	Reg. No. 40,376
Knearl, Homer L.	Reg. No. 21,197	Witt, Jonelle	Reg. No. 41,980
Kowalchyk, Alan W.	Reg. No. 31,535	Wong, Thomas S.	Reg. No. 48,577
Kowalchyk, Katherine M.	Reg. No. 36,848	Wu, Tong	Reg. No. 43,361
Lacy, Paul E.	Reg. No. 38,946	Young, Thomas	Reg. No. 25,796
Larson, James A.	Reg. No. 40,443	Zeuli, Anthony R.	Reg. No. 45,255

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organiza who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys.

Attorney Docket No. 4415.18USWO

10[illegible]0039 .021002 (3)

MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural invent are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS

The specification of which
a. ☐ is attached hereto
b. ☒ was filed on January 2, 2002 as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. PCT/ZA00/00123 filed July 6, 2000 and as amended on (if any), which I h reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended any amendment referred to above.

I [illegible]reby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inven certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date b that of the application on the basis of which priority is claimed:

a. ☐ no such applications have been filed.
b. ☒ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	**APPLICATION NUMBER**	**DATE OF FILING (day, month, year)**	**DATE OF ISSUE (day, month, year)**
South Africa	99/04377	6 July 1999	
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	**APPLICATION NUMBER**	**DATE OF FILING (day, month, year)**	**DATE OF ISSUE (day, month, year)**

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) list [illegible]w and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application [illegible]ner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the nati or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/142,381	6 July 1999

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

I hereby appoint the following attorney[redacted]and/or patent agent(s) to prosecute this appli[redacted]on and to transact all business in the Patent Trademark Office connected herewith:

Albrecht, John W.	Reg. No. 40,481	Leonard, Christopher J.	Reg. No. 41,940
Ali, M. Jeffer	Reg. No. 46,359	Liepa, Mara E.	Reg. No. 40,066
Altera, Allan G.	Reg. No. 40,274	Lindquist, Timothy A.	Reg. No. 40,701
Anderson, Gregg I.	Reg. No. 28,828	Lown, Jean A.	Reg. No. 48,428
Batzli, Brian H.	Reg. No. 32,960	Mayfield, Denise L.	Reg. No. 33,732
Beard, John L.	Reg. No. 27,612	McDonald, Daniel W.	Reg. No. 32,044
Berns, John M.	Reg. No. 43,496	McIntyre, Jr., William F.	Reg. No. 44,921
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Campbell, Keith	Reg. No. 46,597	Parsons, Nancy J.	Reg. No. 40,364
Carlson, Alan G.	Reg. No. 25,959	Pauly, Daniel M.	Reg. No. 40,123
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Daignault, Ronald A.	Reg. No. 25,968	Pytel, Melissa J.	Reg. No. 41,512
Daley, Dennis R.	Reg. No. 34,994	Qualey, Terry	Reg. No. 25,148
Daulton, Julie R.	Reg. No. 36,414	Reich, John C.	Reg. No. 37,703
DeVries Smith, Katherine M.	Reg. No. 42,157	Reiland, Earl D.	Reg. No. 25,767
[redacted]ietro, Mark J.	Reg. No. 28,707	Samuels, Lisa A.	Reg. No. 43,080
Doscotch, Matthew A.	Reg No. P-48,957	Schmaltz, David G.	Reg. No. 39,828
Edell, Robert T.	Reg. No. 20,187	Schuman, Mark D.	Reg. No. 31,197
Epp Ryan, Sandra	Reg. No. 39,667	Schumann, Michael D.	Reg. No. 30,422
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Goff, Jared S.	Reg. No. 44,716	Sebald, Gregory A.	Reg. No. 33,280
Goggin, Matthew J.	Reg. No. 44,125	Skoog, Mark T.	Reg. No. 40,178
Golla, Charles E.	Reg. No. 26,896	Spellman, Steven J.	Reg. No. 45,124
Gorman, Alan G.	Reg. No. 38,472	Stewart, Alan R.	Reg. No. 47,974
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Gregson, Richard	Reg. No. 41,804	Sullivan, Timothy	Reg. No. 47,981
Gresens, John J.	Reg. No. 33,112	Sumner, John P.	Reg. No. 29,114
Hamer, Samuel A.	Reg. No. 46,754	Swenson, Erik G.	Reg. No. 45,147
Hamre, Curtis B.	Reg. No. 29,165	Tellekson, David K.	Reg. No. 32,314
Harrison, Kevin C.	Reg. No. 46,759	Trembath, Jon R.	Reg. No. 38,344
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Hillson, Randall A.	Reg. No. 31,838	Underhill, Albert L.	Reg. No. 27,403
Holzer, Jr., Richard J.	Reg. No. 42,668	Vandenburgh, J. Derek	Reg. No. 32,179
Hope, Leonard J.	Reg. No. 44,774	Wahl, John R.	Reg. No. 33,044
J[redacted]dine, John S.	Reg. No. P-48,835	Weaver, Paul L.	Reg. No. 48,640
J[redacted]as, Nicholas P.	Reg. No. 48,995	Welter, Paul A.	Reg. No. 20,890
Johnston, Scott W.	Reg. No. 39,721	Whipps, Brian	Reg. No. 43,261
Kadievitch, Natalie D.	Reg. No. 34,196	Whitaker, John E.	Reg. No. 42,222
Kaseburg, Frederick A.	Reg. No. 47,695	Wier, David D.	Reg. No. P-48,229
Kettelberger, Denise	Reg. No. 33,924	Williams, Douglas J.	Reg. No. 27,054
Keys, Jeramie J.	Reg. No. 42,724	Withers, James D.	Reg. No. 40,376
Knearl, Homer L.	Reg. No. 21,197	Witt, Jonelle	Reg. No. 41,980
Kowalchyk, Alan W.	Reg. No. 31,535	Wong, Thomas S.	Reg. No. 48,577
Kowalchyk, Katherine M.	Reg. No. 36,848	Wu, Tong	Reg. No. 43,361
Lacy, Paul E.	Reg. No. 38,946	Young, Thomas	Reg. No. 25,796
Larson, James A.	Reg. No. 40,443	Zeuli, Anthony R.	Reg. No. 45,255

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organiz who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

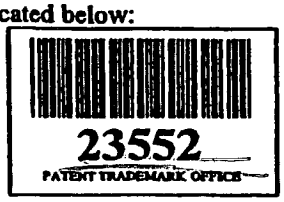
I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys.

10/060039 .021003

F217USA

Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:

Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903



I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belie believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false stat may jeopardize the validity of the application or any patent issued thereon.

1-02	Full Name Of Inventor	Family Name: MORGAN	First Given Name: Dave	Second Given Name: Hedley
0	Residence & Citizenship	City: Vanderbijlpark	State or Foreign Country: South Africa ZAR	Country of Citizenship: South Africa
1	Mailing Address	Address: 2 Saligna Town Houses, Grans Oerder Street	City: Vanderbijlpark	State & Zip Code/Country: 1911/South Africa
Signature of Inventor 201: DAVE HEDLEY MORGAN				Date: May 17, 2002.
2-02	Full Name Of Inventor	Family Name: NASH	First Given Name: Robin	Second Given Name: John
0	Residence & Citizenship	City: The Netherlands	State or Foreign Country: The Netherlands	Country of Citizenship: South Africa
2	Mailing Address	Address: Moerenpad 18	City: Breda NLX	State & Zip Code/Country: 4824 PA Breda/Netherlands
Signature of Inventor 202:				Date:
2	Full Name Of Inventor	Family Name: DE WET	First Given Name: Hester	Second Given Name:
0	Residence & Citizenship	City: Paarl	State or Foreign Country: South Africa	Country of Citizenship: South Africa
3	Mailing Address	Address: 5 Lemoenkloofweg	City: Paarl	State & Zip Code/Country: 7624/South Africa
Signature of Inventor 203:				Date:
4-02	Full Name Of Inventor	Family Name: BOTHA	First Given Name: Jan	Second Given Name: Matthews
0	Residence & Citizenship	City: Sasolburg	State or Foreign Country: South Africa ZAK	Country of Citizenship: South Africa
4	Mailing Address	Address: 38 Billingham Street	City: Sasolburg	State & Zip Code/Country: 9570/South Africa
Signature of Inventor 204: JAN MATTHEWS BOTHA.				Date: May 17, 2002.

10020039.021003

Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:

Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903

23552
PATENT TRADEMARK OFFICE

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and beli believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so mad punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false sta may jeopardize the validity of the application or any patent issued thereon.

2	Full Name Of Inventor	Family Name: MORGAN	First Given Name: Dave	Second Given Name: Hedley
0	Residence & Citizenship	City: Vanderbijlpark	State or Foreign Country: South Africa	Country of Citizenship: South Africa
1	Mailing Address	Address: 2 Saligna Town Houses, Grans Oerder Street	City: Vanderbijlpark	State & Zip Code/Country: 1911/South Africa
Signature of Inventor 201:			Date:	

2	Full Name Of Inventor	Family Name: NASH	First Given Name: Robin	Second Given Name: John
0	Residence & Citizenship	City: The Netherlands	State or Foreign Country: The Netherlands	Country of Citizenship: South Africa
2	Mailing Address	Address: Moerenpad 18	City: Breda	State & Zip Code/Country: 4824 PA Breda/Netherlands
Signature of Inventor 202:			Date:	

3-00 2	Full Name Of Inventor	Family Name: DE WET	First Given Name: Hester	Second Given Name:
0	Residence & Citizenship	City: Paarl	State or Foreign Country: South Africa ZAX	Country of Citizenship: South Africa
3	Mailing Address	Address: 5 Lemoenkloofweg	City: Paarl	State & Zip Code/Country: 7624/South Africa
Signature of Inventor 203: HDeWet			Date: 20/02/02	

2	Full Name Of Inventor	Family Name: BOTHA	First Given Name: Jan	Second Given Name: Mattheus
0	Residence & Citizenship	City: Sasolburg	State or Foreign Country: South Africa	Country of Citizenship: South Africa
4	Mailing Address	Address: 38 Billingham Street	City: Sasolburg	State & Zip Code/Country: 9570/South Africa
Signature of Inventor 204:			Date:	

2.	Full Name Of Inventor	Family Name KINDERMANS	First Given Name Sybrandus	Second Given Name
0	Residence & Citizenship	City Sasolburg	State or Foreign Country South Africa	Country of Citizenship South Africa
5	Mailing Address	Address 3 Van Staden Street, Vaalpark	City Sasolburg	State & Zip Code/Country 9570/South Africa
Signature of Inventor 205:			Date:	

2	Full Name Of Inventor	Family Name SPAMER	First Given Name Alta	Second Given Name
0	Residence & Citizenship	City Vanderbijlpark	State or Foreign Country South Africa	Country of Citizenship South Africa
6	Mailing Address	Address 60 Beefwood Street, SE3	City Vanderbijlpark	State & Zip Code/Country 1911/South Africa
Signature of Inventor 206:			Date:	

	Full Name Of Inventor	Family Name NKOSI	First Given Name Bongani	Second Given Name Simon
0	Residence & Citizenship	City Sasolburg	State or Foreign Country South Africa	Country of Citizenship South Africa
7	Mailing Address	Address 1 Waterkant Street	City Sasolburg	State & Zip Code/Country 9570/South Africa
Signature of Inventor 207:			Date:	

2	Full Name Of Inventor	Family Name MBATHA	First Given Name Muzikayise	Second Given Name Mthokozisi Justice
0	Residence & Citizenship	City Zamdela	State or Foreign Country South Africa	Country of Citizenship South Africa
8	Mailing Address	Address No. 3 Tswelopele Flat	City Zamdela	State & Zip Code/Country 9571/South Africa
Signature of Inventor 208:			Date:	

10020039 .021003

Attorney Docket No. 4415.18USWO

F217USA

(5)

MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that: my residence, post office address and citizenship are as stated below next t name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural invent are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: USE OF METATHESIS PRODUCTS OF FISCHER-TROPSCH PROCESS PRODUCTS

The specification of which
a. ☐ is attached hereto
b. ☒ was filed on January 2, 2002 as application serial no. and was amended on (if applicable) (in the case of a PCT-filed application) described and claimed in international no. PCT/ZA00/00123 filed July 6, 2000 and as amended on (if any), which I h reviewed and for which I solicit a United States patent.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended any amendment referred to above.

I ( )eby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inven certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date b that of the application on the basis of which priority is claimed:

a. ☐ no such applications have been filed.
b. ☒ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
South Africa	99/04377	6 July 1999	
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) lis below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application m)er provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material informatio defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the nat or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)
60/142,381	6 July 1999

2	Full Name Of Inventor	Family Name KINDERMANS	First Given Name Sybrandus	Second Given Name
0	Residence & Citizenship	City Uithoorn	State or Foreign Country The Netherlands NLX	Country of Citizenship South Africa
5	Mailing Address	Address Pr. Beatrix Ln 28	City Uithoorn	State & Zip Code/Country The Netherlands, 1421 AE
Signature of Inventor 205:				Date:
2	Full Name Of Inventor	Family Name SPAMER	First Given Name Alta	Second Given Name
0	Residence & Citizenship	City Vanderbijlpark	State or Foreign Country South Africa	Country of Citizenship South Africa
6	Mailing Address	Address 60 Beefwood Street, SE3	City Vanderbijlpark	State & Zip Code/Country 1911/South Africa
Signature of Inventor 206:				Date:
2	Full Name Of Inventor	Family Name NKOSI	First Given Name Bongani	Second Given Name Simon
0	Residence & Citizenship	City Sasolburg	State or Foreign Country South Africa	Country of Citizenship South Africa
7	Mailing Address	Address 1 Waterkant Street	City Sasolburg	State & Zip Code/Country 9570/South Africa
Signature of Inventor 207:				Date:
2	Full Name Of Inventor	Family Name MBATHA	First Given Name Muzikayise	Second Given Name Mthokozisi Justice
0	Residence & Citizenship	City Zamdela	State or Foreign Country South Africa	Country of Citizenship South Africa
8	Mailing Address	Address No. 3 Tswelopele Flat	City Zamdela	State & Zip Code/Country 9571/South Africa
Signature of Inventor 208:				Date:

I acknowledge the duty to disclose information that is material to the patentability of this application in accordance with T Federal Regulations, § 1.56 (reprinted below):

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effecti patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of al information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to b material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until th claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentabi any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all informat known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the C was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) the closest information over which individuals associated with the filing or prosecution of a patent applica believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of reco being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a

or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under th preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent w specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclu patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application:

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to th attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available b the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

10020039.02US1

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent Trademark Office connected herewith:

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I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/ organi who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

I understand that the execution of this document, and the grant of a power of attorney, does not in itself establish an attorney-client relationship between the undersigned and the law firm Merchant & Gould P.C., or any of its attorneys.

10020039 P2176USA

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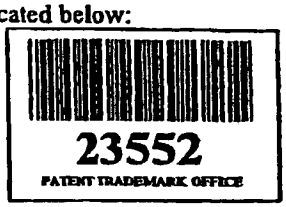

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and b believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so p punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false may jeopardize the validity of the application or any patent issued thereon.

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